

Structure and dynamics of single-isoform recombinant neuronal human tubulin

**Annapurna Vemu^{1§}, Joseph Atherton^{2§}, Jeffrey O. Spector^{1§}, Agnieszka Szyk¹, Carolyn A.
Moores^{2,*} and Antonina Roll-Mecak^{1,3,*}**

SUPPLEMENTAL TABLE 1. Refinement statistics and model geometry

Refinement statistics and model geometry from REFMAC v5.8 (29) and MolProbity (51).

Resolution for refinement	4 Å
Map sharpening B factor	-180
FSC _{average} ^a	0.79
Rms deviations (bonds)(Å ²)	0.008
Rms deviations (angles)(Å ²)	1.438
Molprobity Score	1.75 (100 th percentile)
Clashscore, all atoms	7.39 (100th percentile)
Poor rotamers (%)	1.18%
Ramachandran plot favoured (%)	95.75%
Ramachandran outliers (%)	0.12%

^aaFSC_{average} = $\Sigma(N_{\text{shell}} \text{FSC}_{\text{shell}}) / \Sigma(N_{\text{shell}})$, where $\text{FSC}_{\text{shell}}$ is the FSC in a given shell, N_{shell} is the number of structural factors in the shell. $\text{FSC}_{\text{shell}} = \Sigma(F_{\text{model}} F_{\text{EM}}) / (\sqrt{\Sigma(|F|_{\text{model}}^2)}) \sqrt{\Sigma(F_{\text{EM}}^2)}$

SUPPLEMENTAL MOVIE 1

Dynamics of recombinant human α 1A/ β III microtubules imaged by darkfield microscopy.

Dynamic recombinant human α 1A/ β III microtubules at 9 μ M tubulin imaged by darkfield microscopy. Blue marks the GMPCPP seed. Recorded at 12 frames per minute, played back at 30 frames per second.

SUPPLEMENTAL MOVIE 2

Dynamics of heterogeneous brain microtubules imaged by darkfield microscopy.

Dynamic brain microtubules at 9 μ M tubulin imaged by darkfield microscopy. Blue marks the GMPCPP seed. Recorded at 12 frames per minute, played back at 30 frames per second.

SUPPLEMENTAL MOVIE 3

Depolymerizing human α 1A/ β III microtubule imaged by darkfield microscopy at high temporal resolution. Scale bar, 2.5 μ m. Recorded at 40 frames per second played back at 30 frames per second.